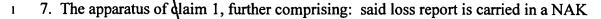
CLAIMS

A router controlling congestion on links attached to the router, comprising:

- a plurality of ports;
- a first port of said plurality of ports for receiving a data packet;
- a second port of said plurality of ports for transmitting said data packet; -
- a receiver to receive an incoming loss report message on said second port;
- a first processor to determine loss of packets on selected ports of said plurality of ports;
- a second processor to calculate, in response to said loss report and said loss of
- 9 packets, a loss rate statistic;
- a transmitter to transmit an outgoing loss report message through said first port,
- said outgoing loss report message containing a field having said loss rate statistic written
- 12 therein.
- 2. The apparatus as in claim 1 wherein said first processor and said second processor are
- the same processor.
- 3. The apparatus as in claim 1 wherein said first processor and said second processor are
- 2 different processors.
- 4. The apparatus as in claim 1 wherein said loss rate statistic is a largest loss rate deter-
- 2 mined by said router.
- 5. The apparatus as in claim 1 wherein said loss rate statistic is a time averaged loss rate.
- 1 6. The apparatus of claim 1, further comprising:
- a linecard supporting at least one of said plurality of ports, said linecard
- having a linecard processor and a memory mounted thereon, said linecard processor
- 4 computing said loss of packets.



- 2 packet.
- 8. The apparatus of claim\1, further comprising: said loss report message is transmitted
- by said router in response to the router receiving a loss report message from a down-
- 3 stream router.
- 9. The apparatus of claim 1, further comprising: said loss report message is transmitted
- by said router in response to the router receiving a loss report message from a target re-
- 3 ceiver station.
- 10. The apparatus of claim 1, further comprising: said loss report message is periodi-
- 2 cally transmitted by said router.
- 1 11. The apparatus of claim 1, further comprising:
- a central processor (CPU) forwarding engine, said CPU forwarding engine deter-
- mining which port said loss report message is to be transmitted out through.
- 1 12. The apparatus as in claim 1, further comprising:
- a central processor (CPU) control engine, said CPU control engine generating said
- 3 loss report message.
- 1 13. A method for operating a router, comprising:
- receiving a multicast group data packet at a first port;\
- transmitting a replica of said multicast data packet from a second port;
- 4 receiving an incoming loss report message on said second port;
- computing a loss of packets on selected ports of said router;
- calculating, in response said loss report and said loss of packets, a loss rate statis-
- 7 tic;

- transmitting an outgoing loss report message through said first port, said outgoing
- 9 loss report message containing said loss rate statistic in a field of said outgoing
- loss report message.
- 14. The method of claim 13, further comprising:
- choosing said loss rate statistic as a largest packet loss rate determined by said
- 3 router.
- 15. The method of claim 13, further comprising:
- 2 choosing said loss rate statistic as a time averaged packet loss rate as determined
- 3 by said router.
- 1 16. The method of claim 13, further comprising:
- selecting said selected ports as members of a multicast group distribution tree.
- 1 17. The method of claim 13, further comprising:
- determining a loss rate statistic which has not expired at "at least one", port of
- said router, where said at least one port includes all ports of a multicast group distribution
- 4 tree of said multicast group;
- writing said loss rate statistic into said outgoing loss report packet and before
- 6 transmitting said loss report packet.
- 18. The method of claim 13, further comprising: transmitting said outgoing loss report
- 2 packet as a NAK packet.
- 19. The method of claim 13, further comprising: transmitting said outgoing loss report
- 2 packet in response to receiving said incoming loss report packet.
- 20. The method of claim 13, further comprising: transmitting said outgoing loss report
- 2 packet periodically.



- 1 21. The method of claim 13, further comprising: transmitting said outgoing loss report
- 2 message as a unicast message to the next upstream router capable of responding to said
- 3 loss report message.
- 22. The method of claim 13 further comprising: transmitting said outgoing loss report
- 2 message as a multicast message.
- 1 23. A router, comprising:
- means for receiving a multicast group data packet at a first port;
- means for transmitting a replica of said multicast data packet from a second port;
- 4 means for receiving an incoming loss\report message on said second port;
- means for computing a loss of packets on selected ports of said router;
- 6 means for calculating, in response said loss of packets, a loss rate statistic;
- transmitting an outgoing loss report message through said first port, said outgoing
- loss report message containing said loss rate statistic in a field of said outgoing loss re-
- 9 port message.
- 24. A computer readable media having instructions written thereon for practicing the
- 2 method of claim 13.
- 1 25. Electromagnetic signals carried on a computer network said electromagnetic signals
- 2 carrying instructions for practicing the method of claim 13.

